

General

Title

Acute myocardial infarction (AMI): the risk-adjusted rate of all-cause in-hospital death occurring within 30 days of first admission to an acute care hospital with a diagnosis of AMI.

Source(s)

Canadian Institute for Health Information (CIHI). Indicator metadata: 30-day acute myocardial infarction in-hospital mortality. [internet]. Ottawa (ON): Canadian Institute for Health Information (CIHI); 2015 May [accessed 2015 Jul 13].

Measure Domain

Primary Measure Domain

Clinical Quality Measures: Outcome

Secondary Measure Domain

Does not apply to this measure

Brief Abstract

Description

This measure is used to assess the risk-adjusted rate of all cause in-hospital death occurring within 30 days of first admission to an acute care hospital with a diagnosis of acute myocardial infarction (AMI).

Rationale

A lower risk-adjusted mortality rate following acute myocardial infarction (AMI) may be related to quality of care or other factors. It has been shown that the 30-day in-hospital mortality rate is highly correlated ($r=0.9$) with total mortality (death in and out of hospital) following AMI.

Evidence for Rationale

Canadian Institute for Health Information (CIHI). Indicator metadata: 30-day acute myocardial infarction in-hospital mortality. [internet]. Ottawa (ON): Canadian Institute for Health Information (CIHI); 2015 May [accessed 2015 Jul 13].

Hosmer DW, Lemeshow S. Confidence interval estimates of an index of quality performance based on logistic regression models. Stat Med. 1995 Oct 15;14(19):2161-72. [PubMed](#)

Tu JV, Austin P, Naylor CD, Iron K, Zhang H. Acute myocardial infarction outcomes in Ontario (methods appendix). In: Naylor CD, Slaughter PM, editor(s). Cardiovascular health & services in Ontario: an ICES atlas (technical and methods appendices). Toronto (ON): Institute for Clinical Evaluative Sciences; 1999.

Primary Health Components

Acute myocardial infarction (AMI); in-hospital mortality

Denominator Description

Total number of acute myocardial infarction (AMI) episodes in an 11-month period (see the related "Denominator Inclusions/Exclusions" field)

Numerator Description

Number of deaths from all causes occurring in hospital within 30 days of admission for acute myocardial infarction (AMI) (see the related "Numerator Inclusions/Exclusions" field)

Evidence Supporting the Measure

Type of Evidence Supporting the Criterion of Quality for the Measure

A formal consensus procedure, involving experts in relevant clinical, methodological, public health and organizational sciences

One or more research studies published in a National Library of Medicine (NLM) indexed, peer-reviewed journal

Additional Information Supporting Need for the Measure

Unspecified

Extent of Measure Testing

Unspecified

State of Use of the Measure

State of Use

Current routine use

Current Use

not defined yet

Application of the Measure in its Current Use

Measurement Setting

Hospital Inpatient

Professionals Involved in Delivery of Health Services

not defined yet

Least Aggregated Level of Services Delivery Addressed

Regional, County or City

Statement of Acceptable Minimum Sample Size

Unspecified

Target Population Age

Age greater than or equal to 20 years

Target Population Gender

Either male or female

National Strategy for Quality Improvement in Health Care

National Quality Strategy Aim

Better Care

National Quality Strategy Priority

Prevention and Treatment of Leading Causes of Mortality

Institute of Medicine (IOM) National Health Care Quality Report Categories

IOM Care Need

IOM Care Need

Getting Better

IOM Domain

Effectiveness

Data Collection for the Measure

Case Finding Period

April 1 to March 1

Denominator Sampling Frame

Patients associated with provider

Denominator (Index) Event or Characteristic

Clinical Condition

Institutionalization

Patient/Individual (Consumer) Characteristic

Denominator Time Window

not defined yet

Denominator Inclusions/Exclusions

Inclusions

Total number of acute myocardial infarction (AMI) episodes in an 11-month period

AMI is coded as most responsible diagnosis (MRDx) but not also as a diagnosis type (2); or
Where another diagnosis is coded as MRDx and also a diagnosis type (2), and a diagnosis of AMI is coded as a type (1) or type (W), (X), or (Y) but not also as type (2); or
Where coronary artery disease is coded as MRDx, AMI as type (1) or type (W), (X), or (Y) but not also as type (2); along with revascularization procedure (percutaneous coronary intervention or coronary artery bypass)

Admission between April 1 and March 1 of the following year (period of case selection ends March 1 to allow for 30 days of follow-up)

Age at admission 20 years and older

Sex recorded as male or female

Admission to an acute care institution (Facility Type Code = 1)

Admission category recorded as urgent/emergent (Admission Category Code = U)

Canadian resident (Canadian postal code)

Note: Refer to the original measure documentation for the administrative codes.

Exclusions

- Records with an invalid health card number
- Records with an invalid date of birth (non-Quebec records)
- Records with an invalid admission date
- Records with admission category of cadaveric donor or stillbirth (Admission Category Code = R or S)
- Previous AMI: Records with an AMI inpatient admission within one year prior to the admission date of the index episode

Exclusions/Exceptions

not defined yet

Numerator Inclusions/Exclusions

Inclusions

Number of deaths from all causes occurring in hospital within 30 days of admission for acute myocardial infarction (AMI)

- Discharge Disposition Code = 07 (Died)
- Facility Type Code = 1 (Acute Care)
- (Discharge date on death record) – (Admission date on AMI record) less than or equal to 30 days

Exclusions

Records with an invalid discharge date

Numerator Search Strategy

Institutionalization

Data Source

Administrative clinical data

Type of Health State

Death

Instruments Used and/or Associated with the Measure

Unspecified

Computation of the Measure

Measure Specifies Disaggregation

Does not apply to this measure

Scoring

Rate/Proportion

Interpretation of Score

Desired value is a lower score

Allowance for Patient or Population Factors

not defined yet

Description of Allowance for Patient or Population Factors

- Indicators are reported at the national, provincial/territorial, and regional levels.
- Unless otherwise specified, for indicators based on place of residence, data is reported based on the region of the patient's residence, not region of hospitalization. Consequently, these figures reflect the hospitalization experience of residents of the region wherever they are treated, including out of province, as opposed to the comprehensive activity of the region's hospitals (that will also treat people from outside of the region). Hospitalizations occurring in the U.S. or abroad are not included.
- For indicators based on place of service (where the patient was treated), data is reported based on the administrative region of the facility (e.g., region of hospitalization).
- Rates are standardized or risk-adjusted wherever possible to facilitate comparability across provinces/regions/facilities and over time.

Risk Adjustment

Statistical regression modelling, an indirect method of standardization in risk adjustment, was used to risk-adjust patient characteristics. Risk factors that were controlled for include age, gender and selected pre-admit comorbid diagnoses that were applicable to the indicator. The selected risk factors were identified based on a literature review, clinical evidence and expert group consultations using the principles of appropriateness, viability (i.e., sufficient number of events) and data availability. Risk factors must be listed as significant pre-admit conditions on the patient's abstract for them to be identified for risk adjustment. For indicators relating to readmission after certain medical conditions (e.g., Readmission After Acute Myocardial Infarction [AMI], Overall Readmission), diagnoses were flagged as risk factors if they were recorded as pre-admit conditions on any of the records within patients' episodes of care. For all other indicators, risk factors were flagged if conditions were recorded as pre-admit diagnoses on the record where the outcome/denominator was abstracted.

Risk-adjusted rates are calculated at the hospital, health administration region and provincial/territorial levels. Regional and provincial risk-adjusted rates are aggregated hospital-level data.

Refer to the *General Methodology Notes* document (see the "Companion Documents" field) for additional information on risk adjustment. Information on Canada averages, model specifications (coefficients and p-values) and International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Canadian Enhancement (ICD-10-CA) codes used to flag risk factors can be found in the *Model Specifications* document (see the "Companion Documents" field).

Standard of Comparison

not defined yet

Identifying Information

Original Title

30-day acute myocardial infarction in-hospital mortality.

Measure Collection Name

Health Indicators ePublication 2015

Submitter

Canadian Institute for Health Information - Nonprofit Organization

Developer

Canadian Institute for Health Information - Nonprofit Organization

Funding Source(s)

Canadian Government

Composition of the Group that Developed the Measure

Employees: Canadian Institute for Health Information (CIHI) Health Indicators

Financial Disclosures/Other Potential Conflicts of Interest

None

Adaptation

This measure was adapted from the following source:

30-Day Acute Myocardial Infarction (AMI) In-Hospital Mortality Rate [*Cardiovascular health & services in Ontario: an ICES atlas 1999*. Toronto: Institute for Clinical Evaluative Sciences.]

Date of Most Current Version in NQMC

2015 May

Measure Maintenance

Annually

Date of Next Anticipated Revision

Unspecified

Measure Status

This is the current release of the measure.

This measure updates a previous version: Canadian Institute for Health Information (CIHI). Health indicators 2013: definitions, data sources and rationale. Ottawa (ON): Canadian Institute for Health Information (CIHI); 2013 May. 89 p.

The measure developer reaffirmed the currency of this measure in April 2016.

Measure Availability

Source available from the [Canadian Institute for Health Information \(CIHI\) Web site](#)

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For more information, contact CIHI at 4110 Yonge Street, Suite 300, Toronto, Ontario, Canada, M2P 2B7; Phone: 416-481-2002; Fax: 416-481-2950; E-mail: hsp@cihi.ca; Web site: www.cihi.ca

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Companion Documents

The following are available:

Canadian Institute for Health Information (CIHI). Indicator library: model specifications - clinical indicators, May 2015. Ottawa (ON): Canadian Institute for Health Information (CIHI); 2015 May. 28 p. This document is available from the [Canadian Institute for Health Information \(CIHI\) Web site](#)

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Canadian Institute for Health Information (CIHI). Indicator library: general methodology notes - clinical indicators, March 2015. Ottawa (ON): Canadian Institute for Health Information (CIHI); 2015 Mar. 19 p. This document is available from the [CIHI Web site](#) .

Canadian Institute for Health Information (CIHI). Canadian coding standards for version 2015 ICD-10-CA and CCI. Ottawa (ON): Canadian Institute for Health Information (CIHI); 2015. 511 p. This document is available from the [CIHI Web site](#) .

Canadian Institute for Health Information (CIHI). Health indicators interactive tool. [internet]. Ottawa (ON): Canadian Institute for Health Information (CIHI); [accessed 2015 Jan 20]. This tool is available from the [CIHI Web site](#) .

NQMC Status

This NQMC summary was completed by ECRI Institute on October 10, 2008. The information was verified by the measure developer on December 18, 2008.

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This NQMC summary was updated again by ECRI Institute on September 4, 2015. The information was verified by the measure developer on November 6, 2015.

The information was reaffirmed by the measure developer on April 29, 2016.

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Questions and inquiries may be directed to: CIHI, Health Indicators, 4110 Yonge Street, Suite 300, Toronto, Ontario, Canada, M2P 2B7; Phone: 416-481-2002; Fax: 416-481-2950.

Production

Source(s)

Canadian Institute for Health Information (CIHI). Indicator metadata: 30-day acute myocardial infarction in-hospital mortality. [internet]. Ottawa (ON): Canadian Institute for Health Information (CIHI); 2015 May [accessed 2015 Jul 13].

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